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Opportunities for a life career in the field of...

Washington

1924

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Opportunities for a life career in the field of public health. Prepared under the direction of the Advisory committee to the surgeon general on the education of sanitarians and the future of public health in the United States. Issued by the United States Public health service. Hugh S. Cumming, surgeon general. Washington, Govt. print. off., 1924.

62 p. incl. illus., diagrs. ports. 25cm.

"Schools and departments of public health, hygiene and preventive medicine": p. 62.

1. Hygiene, Public. I. Title.

24—27413

Library of Congress RA420.U5 1924 b
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OPPORTUNITIES
for a
LIFE CAREER
in the field of
PUBLIC HEALTH

R. D. Leigh

OPPORTUNITIES FOR A LIFE CAREER

IN

THE FIELD OF PUBLIC HEALTH

Prepared under the direction of the
Advisory Committee to the Surgeon General on the
Education of Sanitarians and the Future of
Public Health in the United States

ISSUED BY THE
UNITED STATES PUBLIC HEALTH SERVICE
HUGH S. CUMMING, Surgeon General

WASHINGTON
GOVERNMENT PRINTING OFFICE
1924

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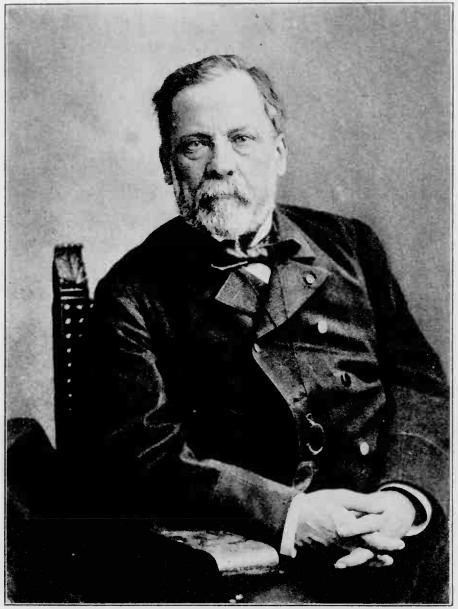

LOUIS PASTEUR

Pasteur was the founder of bacteriology. He established through his original investigations principles of fundamental importance to public health work

INTENTIONAL SECOND EXPOSURE

JAN 12 1945

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FOREWORD

At Washington, in March, 1922, there assembled at the invitation of the United States Public Health Service a small group of leading university presidents, deans of medical schools, and health officers from all sections of the country. They considered what is perhaps the most pressing problem in the field of public health to-day—the problem of trained personnel for the future.

As a result of this conference, there was created the Advisory Committee to the Surgeon General on the Education of Sanitarians and the Future of Public Health in the United States. It is made up of men of the highest standing in the field of medicine and public health in the country. This pamphlet has been prepared with their assistance. The opportunities for a life career in the field of public health which it describes will interest many different types of individuals but particularly those of high attainments and superior ability.

Already the new schools of public health at Johns Hopkins and Harvard and the older schools and departments of public health at the University of Pennsylvania and other institutions have attracted men and women of outstanding promise. There is still room at these universities for able students, and there will be additional opportunities for training at other schools of public health now in process of development.[1] To an increasing degree there will be attracted to these various institutions men and women of keen vision and superior minds who see in

[1] For a list of universities now giving special attention to public health education, see page 62.

preventive medicine and public health work a reasonable and effective method of dealing with the problem of disease. From these centers of training, for the most part new, will emerge the future leaders in public health, those whose achievements may equal or excel the triumphs of Pasteur, Koch, Jenner, Sedgwick, Gorgas, and Biggs.

The United States Public Health Service in Washington will be glad to furnish further information regarding training facilities and vocational opportunities to those who may request it.

Most of the graphs in this pamphlet are taken from "Public Health in the United States," by H. H. Moore, and are used with the kind permission of the publishers, Harper and Brothers, New York.

THE ADVISORY COMMITTEE TO THE SURGEON GENERAL ON THE EDUCATION OF SANITARIANS AND THE FUTURE OF PUBLIC HEALTH IN THE UNITED STATES

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RAY LYMAN WILBUR, President, Leland Stanford Junior University.
ENNION G. WILLIAMS, State Commissioner of Health, Virginia.
LINSLY R. WILLIAMS, Managing Director, National Tuberculosis Association.

"Public Health is the science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of personal hygiene, the organization of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will ensure to every individual in the community a standard of living adequate for the maintenance of health."

C.-E. A. Winslow.

OPPORTUNITIES FOR A LIFE CAREER IN THE FIELD OF PUBLIC HEALTH

In 1793 the city of Philadelphia was visited by an epidemic of yellow fever. Between the first of August and the middle of September, 4,041 persons, approximately one-tenth of the population, died. "The consternation of the people," wrote Matthew Carey, an eyewitness, was carried beyond all bounds. Dismay and affright were visible in the countenance of almost every person. Many shut themselves in their houses and were afraid to walk the streets. . . . . .

"Acquaintances and friends avoided each other and only signified their regard by a cold nod. The old custom of shaking hands fell into such disuse that many shrunk back with affright at even the offer of the hand. A person with a crape, or any appearance of mourning, was shunned like a viper. And many valued themselves highly on the skill and address with which they got to the windward of every person they met. Indeed, it is not probable that London, at the last stage of the plague, exhibited stronger marks of terror than were to be seen in Philadelphia from the 24th or 25th of August till pretty late in September."

To-day, such an epidemic is practically impossible; the recurrence of such horrors, out of the question. Patient, persistent, self-sacrificing efforts on the part of health officers and other sanitarians have removed this partic-

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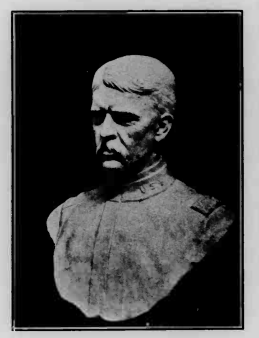
ularly serious menace to human life and happiness. In addition, other diseases—typhoid fever, malaria, smallpox, diphtheria, and even tuberculosis—are being successfully attacked. They are gradually yielding to the vigorous application of scientific measures. The men and women responsible for these achievements have contributed largely to the happiness and welfare of mankind.



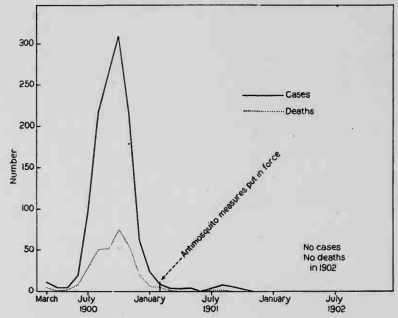
WALTER REED

The researches of Walter Reed and his associates at Havana made possible the conquest of yellow fever

Nevertheless, further progress is not only possible but necessary. More babies are dying each year, many of them needlessly, than the number of American soldiers killed during the World War. The great epidemic of influenza which recently swept the country taking its toll of hundreds of thousands left sanitarians none the wiser regarding its control. Tuberculosis kills thousands and costs the Nation $500,000,000, to $800,000,000 annually. Syphilis and gonorrhea still cause a vast amount of sterility and invalidism. Pneumonia is still unconquered; cancer baffles the skill of scientists, and diseases of the heart and kidneys cut short the lives of thousands in their prime.

There is still an opportunity for a Koch to discover the germs responsible for measles and scarlet fever, for an Ehrlich to find a cure for cancer, for a Jenner to learn how mankind may be made immune to influenza. That in

1922 the infant mortality rate could vary from 37 per 1,000 in one American city to 204 per 1,000 in another and that by comprehensive efforts the death rate from tuberculosis in a typical community was cut to less than half within a period of five years are indications of the opportunities for useful work in this direction. The wider and more complete application of the scientific



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Cases and deaths from yellow fever in Havana, Cuba, before and after antimosquito measures were put into effect

THE CONQUEST OF YELLOW FEVER

facts already available will save the lives of thousands and bring about the enrichment of life for all the people.

The reduction of disease and the promotion of health may still, therefore, challenge the enthusiasms, the energies, and the inventive genius of American youth. Despite all that has been achieved, young men and women may still find in the field of public health many opportunities for large accomplishments.

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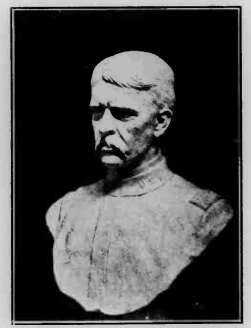

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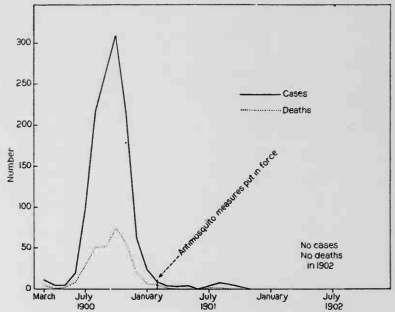

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IGNORANCE OF THE OPPORTUNITIES AVAILABLE

A medical student was asked to give his reasons for not planning to enter a school of public health. This was his answer: "I never considered public-health work and do not know enough about it to comment on its desirability or undesirability. Would welcome information."

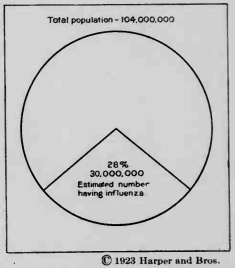
"What," he might have asked, "does the field of public health include? What sorts of work are involved? What training is required and how may it be secured? Is the compensation adequate? What is the relation between the demand and the supply of properly qualified persons? What of the future?" In the belief that many young men and young women are interested in these questions and would be glad to learn more concerning the numerous and varied opportunities in the field of public health, this pamphlet has been prepared.

A NEW AND DEVELOPING FIELD

Of primary significance, from the point of view of the vocational opportunities which public health offers, is the fact that it is not a static, but a comparatively new and rapidly developing field. "The new public health" of a few decades ago includes only the more conventional interests of the present day. Then attention was centered upon what may be called environmental sanitation—the provision of a safe water supply, the proper disposal of wastes, the prevention of the breeding of insect carriers of disease. To-day there are included in addition, not merely the control of community infections through isolation and disinfection and the application of sera and vaccines to develop immunity, but also problems of personal hygiene, child hygiene, mental hygiene, the early

diagnosis of incipient disease and treatment, under certain conditions, in clinics and health centers. Nor are there as yet any indications that this period of expansion is at an end. As the large possibilities in public-health work are realized, the field will undoubtedly extend further in new directions.

This remarkable development has created and will continue to create many new positions and many new types of work. There are to-day at least 19,000 persons employed in technical or semi-technical whole-time public health positions in the United States, and the number is increasing. Some of these men and women are primarily executives, organizing the activities of official or unofficial health agencies or directing health campaigns; others are technically trained and are employed in the practical use of their training; still others are engaged in research work, finding in the numerous problems yet unsolved an attractive field for their activities. The variety of positions open is large and opportunities for many different types of ability are offered. Those who are fortunate enough to enter the field now will undoubtedly participate, if properly qualified, in this expansion and share in the rewards and satisfactions which such pioneer work provides.



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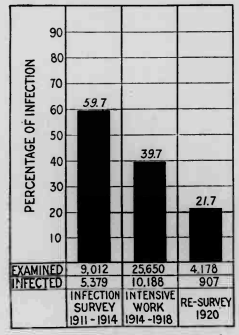
Estimated number of persons who had influenza during 1918–19 epidemic in the United States, based on a study of 11 well distributed localities

Influenza remains unconquered, a challenge to the scientist who would apply his genius to the reduction of human suffering.

A PUBLIC SERVICE PROFESSION

Furthermore, public health work, whether in connection with a State or local board of health, a public-school system, or a private organization, is a form of public, of patriotic service. It is for the sake of the community and the Nation as a whole. A single sanitarian,[1] perhaps altogether unconsciously, may help hundreds, even thousands, to postpone death and incapacity. Who can measure what humanity owes to Louis Pasteur! Or how much the simple fisher folk of Labrador are indebted to Doctor Grenfell! Or what Walter Reed and his associates contributed to human welfare by their study of yellow fever at Havana! The health officer in the smallest county of the country may share with such men the satisfaction of having produced an unmeasurable increase in human well-being.



From the Rockefeller Foundation Annual Report, 1920

Decline in hookworm disease incidence among school children in Southern States during 10-year period 1911–1920. Based on examination of 38,840 cases in 12 counties

It requires only trained sanitarians and money to bring about the virtual eradication of hookworm disease

During the past 50 years the average expectation of life in this country has been prolonged at least 10 years. There has been a great reduction in human suffering and misery and in inefficiency resulting from sickness and disease. Infancy, childhood, adolescence, maturity and old age have profited. This improvement has been due in large measure to sanitarians who have labored quietly but earnestly in the laboratory and in the field. The continuation of this improvement in the future is a responsibility of their successors. Young men and young women who wish to render a high form of patriotic service, who desire to contribute largely to human welfare, will find in public-health work a broad field for the application of their energies.

[1] This term is used to include all those professionally employed in public health work.

THE NECESSARY EQUIPMENT AND TRAINING

Every man and woman entering the field of public health should have, as a basis for the various kinds of special training required, a solid foundation of general education. Of fundamental importance is work in the basic sciences. A general course in biology is now generally recognized as desirable for all students. The sanitarian in particular needs the information which such a course includes. He needs also courses in physiology and anatomy and in physics and chemistry. As early as possible in the secondary school and in college he should take advantage of the science courses offered; they are indispensable for effective work in the public health field.

Almost as important, both for the ordinary citizen and for the sanitarian, and hitherto often neglected, is training in the field of economics and sociology. These courses are of immediate value in connection with all problems of health. Health problems often involve economic or social problems. Poverty and ill health make up a vicious circle. Conditions of work seriously

affect the health of workers, particularly women and children. Housing problems are health problems. Crime and delinquency are often the result of mental abnormalities. Prostitution, which is the chief source of venereal diseases, is in part a social problem. The effective worker in the field of public health must therefore understand our economic and social organization and appreciate the value from the point of view of public health of improved economic and social conditions.

WILLIAM C. GORGAS

By utilizing the scientific work of Walter Reed and his predecessors, Gorgas was enabled to inaugurate sanitary measures which made possible the construction of the Panama Canal

Other courses of a general character will be of value. Considerable training in mathematics is required for certain types of work, particularly statistical studies, courses in psychology for those who would participate in the rapidly growing field of mental hygiene. For many positions a business training will be found advantageous. Knowledge of political science, particularly municipal government and administration, is positively essential for those who aspire to administrative positions. Every student who contemplates entering the field of public health should, if possible, direct his attention during his undergraduate years to the subjects which form the foundation for his later study.

For most positions special training must be secured. Graduate work leading to the doctorate of philosophy is advisable in certain occupations, such as that of the bacteriologist and the physical director. A medical degree is almost always of advantage; in many positions it is essential. Usually, however, it should be supplemented by a year or two in a school of public health. In 1924 there were schools of public health at Harvard, Johns Hopkins, and the University of Pennsylvania, and special departments or curricula at Howard University, Massachusetts Institute of Technology, New York University, Ohio State University, University of California, University of Chicago, University of Michigan, University of Minnesota, Western Reserve University, and Yale University. Among the degrees conferred were the following:

D. P. H. (Doctor of public health) usually requiring two years of special work in addition to an M. D. degree.

D. Sc. (Doctor of science) usually requiring three years following an A. B. degree.

Ph. D. (Doctor of philosophy) usually requiring three years following an A. B. degree.

C. P. H. (Certificate in public health) requiring one or two years of special work following the bachelor's degree or the M. D. degree.

It is essential that all academic study should be supplemented by practical training in the field. Arrangements have been made by institutions giving courses in public health for such training in connection with State and municipal departments of health and private organizations. No worker is qualified, no matter what his academic training, without field experience under skilled direction.

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COMPENSATION

An important consideration for those entering upon a career is the compensation paid. This is a matter which must be considered later under the various types of work to be described. In general, however, it may be stated that most positions in the field of public health pay a definite salary, an advantage over the somewhat precarious returns of the private practitioner of medicine. At the present time, it is true, these salaries are not altogether commensurate with the amount of time which must be spent in preparation. The value of specialized training still fails to receive full recognition. However, salaries in this important branch of scientific service compare favorably with those in other scientific fields. Public health work does not yield as high financial recompense as do some commercial occupations, but it does bring a high reward in the satisfactions of achievement. Furthermore, the salary situation is improving. For instance, within two years the average salary paid to State health officers has increased over $400. The salaries of municipal health officers have in many instances more than doubled during the past two decades. A movement toward increased salaries, in which those who are now beginning their preparation for work in this field will undoubtedly share, is clearly apparent.

TENURE OF OFFICE

Hitherto one of the chief disadvantages in many types of public health work has been the uncertain tenure of office. Occasionally political considerations have governed the appointment of men to public positions and have

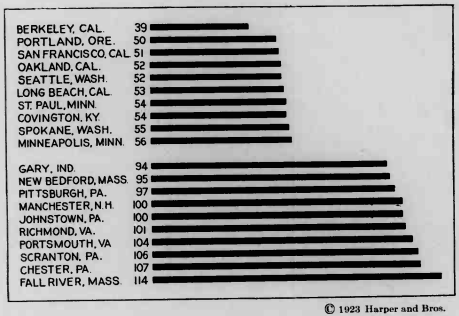
resulted not only in an inferior type of office incumbent but also in an unfortunately short term for any well-qualified individual who happened to be appointed. With the increasing public appreciation of the value of public health work and of the necessity of securing properly trained officials, an improvement is taking place. Positions in this field are tending to become much more secure. In many cases, civil-service regulations have already been applied. Recently the United States Public Health Service was called upon to conduct an examination for an important position in one of the larger cities. In the notice of the examination it was specifically stated that "the position is guaranteed free from political interference." The well-trained man is becoming increasingly secure as long as he performs the duties of his office without interfering in political matters.

THE FUTURE

Some indication of what the future of public health in the United States may be is indicated by the developments of the last few years. This is a growing field, and a field in which the public is realizing to an increasing degree the value of effective work. We do not as yet understand all the possibilities which are open to the sanitarians of the next half century. That these possibilities are large we do know; the opportunities for trained intelligence and aroused enthusiasm are almost unlimited. To the young men and young women of the advancing generation, the field is open. If they find any of the work described in the following sections to their liking, they may well consider it in choosing their life career.

TYPES OF OCCUPATION

Statements have been prepared regarding the more important occupations in public health work. These statements are based upon information supplied by men and women actually at work in the field. There is appar-



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Infant mortality rates per 1,000 live births during 1921 in 10 cities with the lowest rates and 10 cities with the highest rates—cities of 50,000 or more population in 1920—birth registration area

The achievements of some cities in preventing infant mortality emphasize how much remains to be done in many other cities

ent a general need for most types of sanitarians. It should be understood, however, that the demand is for well-trained men and women of high grade, and that the field does not offer large opportunities for inferior men. The occupations considered are as follows:

1. Public health administrator or executive.
   - (a) United States Public Health Service.
   - (b) State departments of health.
   - (c) City departments of health.
   - (d) County health service.
   - (e) Health service in industry.
   - (f) Health service in schools.
   - (g) Voluntary organizations.
2. Physician in public health work.
3. Dentist and oral hygienist in public health work.
4. Sanitary engineer.
5. Statistician.
6. Public health nurse.
7. Medical social worker.
8. Nutrition expert.
9. Expert in popular health education.
10. Expert in physical education.
11. Sanitary inspector.
12. Public health laboratory specialist.
13. Specialist in research.
14. Teacher in courses of public health.

It would be possible to add considerably to this list. For instance, the life insurance medical adviser might be given special consideration. The architect engaged in the construction of hospitals, factories, schools, and private houses is from some points of view a sanitarian. A certain number of lawyers specializing in public health legislation will always be needed. However, the material here given covers, it is believed, the more important types of work.

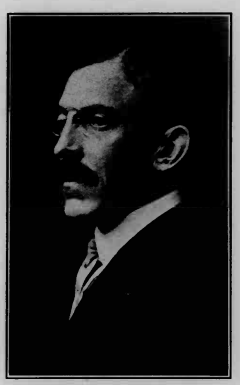
1. The Public Health Administrator or Executive

In May, 1907, bubonic plague, dread disease of the Orient, made its appearance in San Francisco. The local authorities were unable to cope with the situation. In the emergency the mayor telegraphed to the President for help. Passed Assistant Surgeon Rupert Blue of the United States Public Health Service was sent to San Francisco to take charge. As a result of the vigorous and intelligent efforts undertaken at his direction, the disease was checked with the loss of comparatively few lives. A plague which has destroyed the lives of millions in Europe and Asia was halted before it had gained any great headway.

In ordinary times, as well as in times of crisis, the executive officer or administrator who directs activities in the field is perhaps the most important figure in public health work. He may be at the head of a local (rural or municipal), State, or Federal health department, or of a particular bureau or division in such a department; for instance, a division of child hygiene or of communicable diseases. He may be the executive of a voluntary organization which is concerned with some health problem. He may be a clinic director; he may be in charge of a particular form of health service—i. e., in industry or in the schools. Administrative positions in public-health work are of wide variety and should appeal particularly to men of medical training who have executive ability.

In what does executive ability as required for administrative positions in the field of public health consist? Not primarily in the ability to enforce certain laws or regulations or to fix upon and carry out certain prescribed

procedures. To-day far more will depend upon the ability of the public health administrator to secure the voluntary cooperation of various groups and individuals in the community. Public opinion must be roused to the importance of health measures, public support for a comprehensive health program developed. Furthermore, imagination and vision to see and meet the new needs which are constantly arising are needed. Not only the well established but also the newer aspects of public health must receive attention. Plans must be made to attack new problems and to utilize new methods of attack. The public health administrator must be a statesman.



HERMANN M. BIGGS

First a scientific investigator, then the head of the New York State Department of Health, Biggs, at the time of his death in 1923, had become one of the great public health statesmen of the world

For most of the local and the larger administrative tasks he will need the training of what may be called the general practitioner of public health. He may have specialized in a particular subject, i. e., tuberculosis work or sanitary engineering. He may and will usually have a medical degree. But in addition he should have a broad training such as is provided by the schools of public health.

The salaries of public health administrators are more and more tending to become commensurate with the time

INTENTIONAL SECOND EXPOSURE

1. The Public Health Administrator or Executive

In May, 1907, bubonic plague, dread disease of the Orient, made its appearance in San Francisco. The local authorities were unable to cope with the situation. In the emergency the mayor telegraphed to the President for help. Passed Assistant Surgeon Rupert Blue of the United States Public Health Service was sent to San Francisco to take charge. As a result of the vigorous and intelligent efforts undertaken at his direction, the disease was checked with the loss of comparatively few lives. A plague which has destroyed the lives of millions in Europe and Asia was halted before it had gained any great headway.

In ordinary times, as well as in times of crisis, the executive officer or administrator who directs activities in the field is perhaps the most important figure in public health work. He may be at the head of a local (rural or municipal), State, or Federal health department, or of a particular bureau or division in such a department; for instance, a division of child hygiene or of communicable diseases. He may be the executive of a voluntary organization which is concerned with some health problem. He may be a clinic director; he may be in charge of a particular form of health service—i. e., in industry or in the schools. Administrative positions in public-health work are of wide variety and should appeal particularly to men of medical training who have executive ability.

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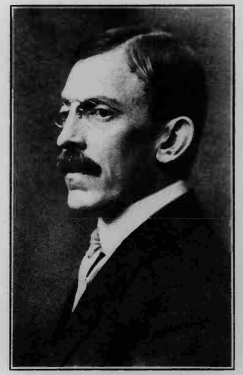

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The salaries of public health administrators are more and more tending to become commensurate with the time

necessarily expended in preparation. In the past many administrative positions have been held by physicians on a part-time basis or even by men without any special training, with the result that the salary standard has been somewhat low. In the Federal service the compensation ranges from approximately $3,000 to $7,500, including commutation. The average salary for State health officers (1922) was $4,453; for city health officers (cities over 100,000), $4,188. In both cases, the maximum was $10,000. The tendency was somewhat higher in national voluntary organizations. A steady improvement is now taking place. As the public comes to recognize more completely the value of a well-trained public health administrator and as the qualifications required for this position are raised, salaries will tend to improve.

At the present time the demand for well-trained public health administrators exceeds the supply. Part-time officials are rapidly being replaced by full-time men and this alone means a constant increase in the number of positions open. The increasingly high standard of men required will help to make for greater security of tenure.

There follow statements concerning various organizations or types of organizations in the field of public health which require administrators or executives. Obviously these organizations also employ other types of sanitarians. By describing their activities here, it will be unnecessary to elaborate further in later sections.

(a) *The United States Public Health Service.*—In 1798 Congress authorized the formation of the Marine Hospital Service whose duty it was to furnish medical care to sick and disabled seamen of the American merchant marine.

Through a natural process of evolution, this service has expanded and is now known as the United States Public Health Service. It still conducts the marine hospitals. In addition it is on constant guard, through the medical

Quarantine officers of the United States Public Health Service boarding a transatlantic liner for quarantine inspection

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INTENTIONAL SECOND EXPOSURE

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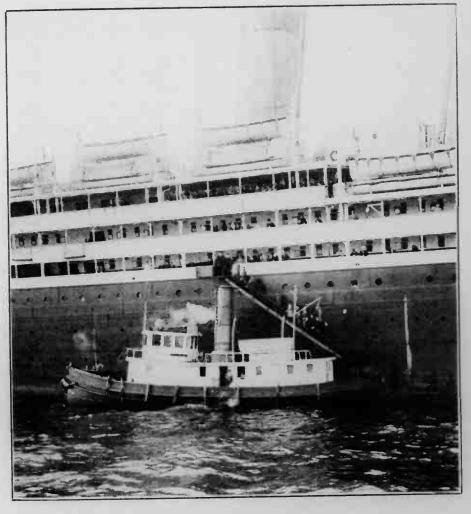

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epidemics; it is at all times ready to cooperate with State and local health agencies, particularly in rural health work, malaria and venereal disease control; it supervises and controls the manufacture of biologic products such as vaccines and antitoxins; it carries on a considerable amount of research work, and is developing a program of health education. As the chief Federal agency[2] interested in health, its officers have considerable prestige and its contribution to public health progress is large.

The chief executive officer of the Public Health Service is the Surgeon General, who has a number of assistants, in charge of the various divisions. The Assistant Surgeons General in turn may have a number of executives under their direction, such as those in charge of the different marine hospitals or the inspection of immigrants at various ports, both here and abroad. When a State department of health calls upon the Federal service to undertake the reorganization of its activities, or when an epidemic results, as at San Francisco, in a request for assistance, the service must be able to send a capable executive.

Entrance into the regular corps of the Public Health Service is by examination. Information concerning the prerequisites for an invitation to take the examination and the nature of the examination will be supplied upon request.

The compensation in the Public Health Service ranges from about $3,000 for an assistant surgeon to $7,500 for the Surgeon General, depending on length of service and amount of commutation. Promotion is according to a

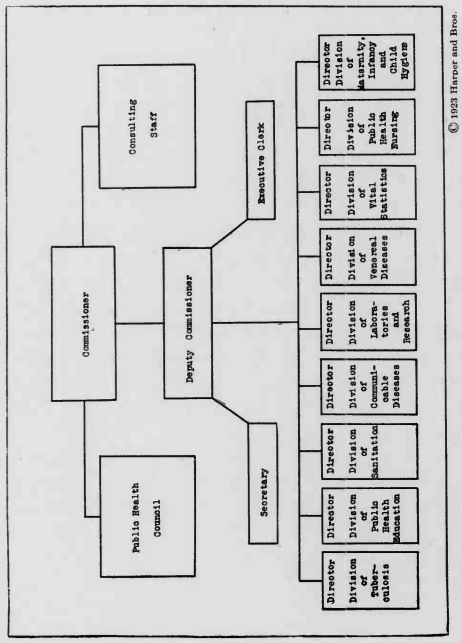
[2] A number of other Federal agencies, such as the Children's Bureau, the Bureau of Education, and several bureaus in the Agricultural Department, employ various types of sanitarians

definite schedule. Continuance in office depends on good behavior, attention to duty, and satisfactory performance.

(b) *State departments of health.*—The first State department of health in this country was that of Massachusetts, established in 1869. Now such an organization exists in every State. The degree of centralization of authority differs, of course, but certain functions—i. e., the control of communicable diseases, especially during epidemics, and the provision of laboratory service—are common to all.

Besides the executive officer (usually known as the commissioner of health or State health officer), who directs all the activities of the department, there are usually a number of subordinate executives in charge of the various bureaus or divisions. The Michigan State Board of Health, for instance, has the following bureaus: Communicable diseases and vital statistics, laboratories, engineering, nursing and child hygiene, institutional health administration, education, and embalming. Women are in charge of the bureau of nursing and child hygiene and the bureau of education.

The executive officer of the State department of health is usually elected by the State board of health. In some cases he is named by the governor. Subordinate officers may be appointed by the executive officer or be chosen by a civil-service examination. Salaries vary from one State to another. The American Public Health Association has fixed $5,000 as the minimum which should be paid a State health officer. The average in 1922 was $4,453; the maximum $10,000. Salaries of subordinate officers are, of course, lower. In a few States the position of executive officer is, unfortunately, still regarded as a political spoil,



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THE ORGANIZATION OF THE NEW YORK STATE BOARD OF HEALTH

Not every State department of health can afford so many separate divisions, but every State department of health can carry on all the types of work included

but this attitude is disappearing. Subordinate officers in most States enjoy reasonable security.

(c) *City departments of health.*—There are 287 cities in the country with 20,000 population or over, all of which should have by all means a full-time executive health officer. But even in 76 ot the largest cities of the country there were, in 1920, 25 whose health departments had only a part-time executive officer.

The executive officer of the city department of health is immediately responsible for the health of the community. He must insure the safety of the water and milk supply; he must provide for the inspection of all foodstuffs sold; he must maintain a system of sanitary inspection. In most cities the vital statistics required by the State department of health are collected by the executive officer of the local health department. Many cities are now providing clinics for the treatment of tuberculosis and venereal diseases. Others are devoting particular attention to infant hygiene work and have opened prenatal clinics and infant welfare stations. Public health nursing, formerly conducted altogether by voluntary agencies, is more and more being taken over by departments of health. The scope of activities is constantly increasing. In general charge of all this work is the executive officer who will usually have under him a number of subordinate executives, such as the clinic directors and the chief sanitary inspector.

The executive officer of the health department is most often appointed by the mayor and council or by the city board of health. The tendency to use the position for political purposes is gradually disappearing. Salaries range up to $10,000, the average in the larger cities of the

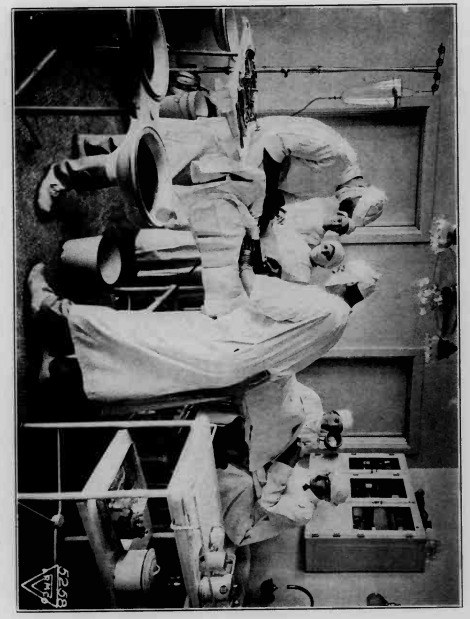
country being (1922) $4,188. Some of the smaller cities, however, are realizing the importance of health measures and are paying equally good salaries. Subordinate positions may be filled through civil service. Salaries, of course, differ with the type of work.

(*d*) *County health service.*—The health of rural communities is no less important than that of urban areas. In fact, certain diseases are more prevalent in the country. Insanitary conditions of great danger to health are frequently found.

The program for a rural health service is essentially little different from that of a city department of health. It includes the safeguarding of water and food supplies, the control of dangerous communicable diseases, prenatal and child hygiene, school hygiene, the control of soil pollution, the eradication of insect carriers of disease, and educational work. In the Southern States particular attention must be paid to the control of malaria and hookworm disease.

At the present time little more than 10 per cent of the rural population of the United States has a local health service under the direction of a whole-time health officer. Out of 2,850 counties in the country, wholly or in part rural, there were at the beginning of 1924 only 250 whole-time county health officers. In a few additional counties, however, a full-time public health nurse was doing effective work. The salary for county health officers ranges from $2,500 to $5,000.

(*e*) *Health service in industry.*—More and more employers are recognizing the value of health service for their employees. Tremendous economic losses occur from disabling sicknesses and from minor ailments which reduce



THE OPERATING ROOM OF A LARGE MANUFACTURING COMPANY

The medical department consists of 3 full-time physicians, 11 nurses, and 6 other employees. Every applicant for employment is given a careful examination

INTENTIONAL SECOND EXPOSURE

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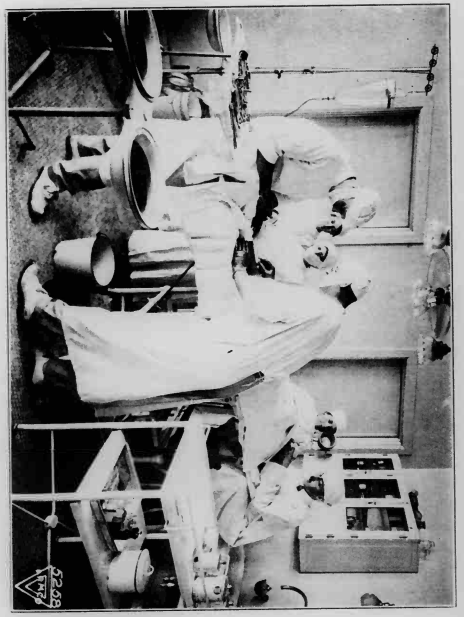

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efficiency. Through industrial health service, sickness may be recognized at an early stage and its more serious effects prevented.

The executive officer in charge of an industrial health service may have under his direction a number of workers. These will include nurses for work in the plant and for home visiting, physicians for special case treatment, dentists for dental service. In the larger industrial establishments the executive medical officer holds a position of considerable responsibility and his salary is not infrequently generous.

(f) *Health service in public schools, colleges, and universities.*—The importance of safeguarding the health of children during the early years and the possibility of checking incipient disorders by early recognition has led to the establishment of a health service in many school systems throughout the country. By such a service it is possible to discover curable defects and also to provide hygiene instruction. A well-developed public-school health service, or program, includes the physical examination of school children, provision for the remedying of defects, health instruction, and physical education. In some cities, furthermore, special classes for various types of defective children have been established.

In some cities an attempt has been made to bring all these various types of work together under the supervision of a director of school health work who shall be responsible only to the city superintendent of schools. At the present time, however, physical education is usually carried on independently of the other phases of school health work, particularly in the high school.

To secure a position as director of school health work, one should have an M. D. degree, or a Ph. D. degree in school hygiene or similar subject. There are now, however, a number of directors of school health work, not having supervision over the medical examination of school children, who do not have either of these degrees. For the position of State supervisor of physical education, which includes to an increasing degree the whole broad field of health work, it is especially important that medical training be secured. Of even greater importance, perhaps, for these particular positions, is a high order of administrative ability.

The National Child Health Council[3] formulated a few years ago a program for school health work and has suggested for a city having a population of 25,000 to 30,000 the following personnel: A director of school health work who should receive a minimum salary of $4,000, several part-time school physicians, a supervisor of health education and physical education, a mental hygienist, school nurses, a part-time dentist, and several oral hygienists.

The school physician (whether he works directly under the city health officer, the city superintendent of schools, or the director of school health work) has charge of the physical examination of all school children. He may have under his direction a number of nurses and also map out for the school teachers the necessary instruction in hygiene.

In several colleges and universities there has been established a comprehensive health service. In many institu-

[3] Superseded in 1922 by the American Child Health Association

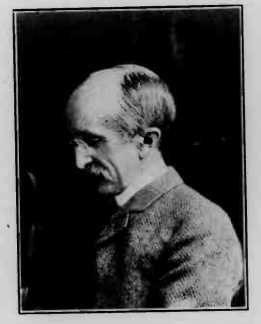
tions gymnasium work and athletics are conducted more or less independently and little attention has been paid to the sanitation of the college community and to infectious diseases and other disorders. In the future, men and women with medical training will be needed for health work in colleges and universities; and in many instances, it is hoped, they will be needed to take full charge of a well-balanced health program. This will include the physical examination of the students, health instruction, physical education, hospital service, and community sanitation.

(*g*) *Voluntary health organizations.*—Although the prevention of disease and the maintenance of public health are essentially the functions of public authorities, there has always been and probably will continue to be for many years a large place for voluntary health organizations. They will be concerned primarily with activities whose importance does not become promptly appreciated. Having proved the value of a certain form of health service, the voluntary organization will then be in a position to demand that it be taken over by official health agencies.

There are a great number of voluntary health organizations in the United States. The International Health Board, created by the Rockefeller Foundation, carries on world-wide activities. It has performed valuable service in this country in connection with the eradication of malaria and hookworm disease by demonstrating the effectiveness of various methods of control. It has assisted with funds a considerable number of other private organizations. Its staff officers have many opportunities to engage in interesting and productive work. The compensation paid after one year of service ranges from $3,500

to $6,500. A special increase of 10 per cent is made for foreign service.

Other organizations are concerned with particular health problems. The American Social Hygiene Association deals primarily with questions of sex health. It aims not merely at the control of venereal diseases, but also at a more complete understanding of the sex life. The National Tuberculosis Association has led the fight against tuberculosis and to its activities may be directly attributed in large measure the great advance which has been made. The National Committee for Mental Hygiene is developing an educational program, it conducts surveys of mental health and establishes child guidance clinics, especially for the aid of abnormal children. The American Public Health Association publishes the American Journal of Public Health and arranges an annual meeting of interest to all sanitarians.



EDWARD LIVINGSTON TRUDEAU

Trudeau demonstrated the curative value of outdoor living and proper regimen, making possible the work of the National Tuberculosis Association

Several of the voluntary health agencies which have been named have corresponding local and State organizations. Some of these smaller units, as well as the national organizations, have a full-time executive officer. Other local units depend largely on part-time workers.

INTENTIONAL SECOND EXPOSURE

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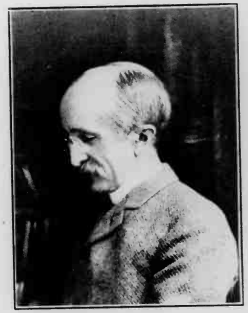

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All the national health agencies named, together with the American Child Health Association, the American Society for the Control of Cancer, the American Red Cross, the National Organization for Public Health Nursing, and the Conference of State and Provincial Health Authorities of North America, have united to form the National Health Council. This organization aims to coordinate the work of the various agencies which have been described. It is a clearing house for information and itself carries on a limited number of activities.

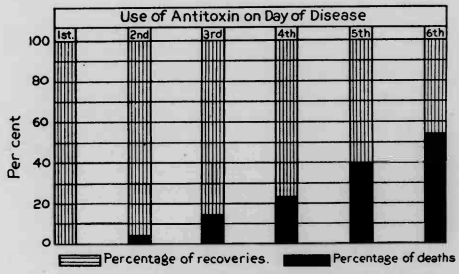
2. The Physician in Public Health Work

In addition to the many physicians who occupy administrative and executive positions in public health are those who continue to practice medicine, but in a public rather than a private capacity. They are found in public clinics and dispensaries, in industrial and school health services. In a number of respects their work will differ from that of the ordinary private practitioner. They may be concerned with a particular disease problem, i. e., tuberculosis, the venereal diseases, or they may minister to a particular group—an industry, a school. The emphasis in all their activities will be placed upon prevention.

A report of the American Medical Association shows that there were in 1912 over 900 general dispensaries treating various diseases in the country and in addition 667 special tuberculosis clinics, 487 special venereal disease clinics, and 260 clinics for mental and nervous disorders. Each dispensary and clinic requires an executive officer who is usually a physician and in addition may have several physicians for ease work. The mental hygiene clinic requires psychiatrists or physicians who have specialized in mental

diseases. Over 2,600 full time physicians were employed in dispensaries and clinics, according to the above-mentioned report, and nearly 20,000 others on a part-time basis. These figures are low because they include those employed by only 615 general dispensaries.

The opportunities in connection with health services in industrial plants and in the schools have already been



Percentages of recoveries from diphtheria when antitoxin is administered on various days in the course of the disease

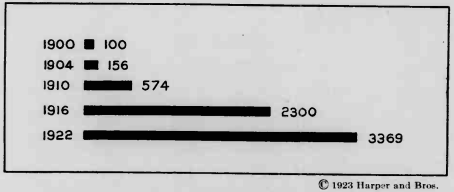
THE CONQUEST OF SCIENCE OVER DIPHTHERIA

The eradication of diphtheria depends largely on the more extensive use by physicians and public health agencies of the Schick test and toxin-antitoxin, as well as of antitoxin

indicated. Health service in industrial plants, it is being realized, pays from the economic point of view. And more and more the school must help to keep the body healthy as well as the mind alert. Both are expanding fields which will require the services of an increasing number of trained practitioners in various types of positions.

Of increasing importance is the psychiatrist in the field of crime prevention. There was on July 1, 1922, a total

population in the penal institutions of the United States of approximately 164,000, an increase of more than 27,000 over 1910. Furthermore, there are in these institutions three or four times as many persons during a single year as are found at any one time. Modern science shows that, in a large proportion of cases, delinquency and crime are due to various mental abnormalities. Not only are many institutions failing to deal intelligently with such cases, but conditions in many



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GROWTH OF DISPENSARIES AND CLINICS IN THE UNITED STATES

Many families due to their economic condition are unable to pay the fees of private practicioners, particularly of specialists. The dispensary and clinic supply treatment free or at cost and conduct follow-up work, especially among those with diseases which make them a menace to others

local jails and in some prisons are insanitary and destructive to the morality and future usefulness of the inmates. The physician, because of his scientific knowledge, is becoming increasingly useful in the scientific treatment of criminals and, what is more important, in the prevention of crime through the proper diagnosis of first offenders.

It is difficult to state the salary range in this work, so wide are the variations due to different types of work and different grades of ability and extent of experience.

In general, the rewards are probably not as great as in private practice, but frequently the executive positions in industrial health work pay very good salaries. In some ways the private practitioner enjoys greater independence, but his returns are likely to be more precarious, his hours more irregular, and the aggregate amount of his service to mankind smaller. Physicians in public health work enjoy rewards and satisfaction which are not open to the private practitioner.

An adequate training for the physician is public health work may be secured in any standard medical school. For some types of work he should specialize, for instance, in tuberculosis, venereal disease, child hygiene, cardiac diseases. Particular attention should be paid to the courses in preventive medicine rather than to those in curative medicine and surgery. At the present time there is a general tendency in medical schools toward greater emphasis upon preventive medicine. So far as the public health physician is concerned, this tendency should be accentuated.

While there are a sufficient number of physicians who with slight additional training would qualify for dispensary service, more young men are needed to prepare themselves definitely for this form of practice.

3. The Dentist and Oral Hygienist in Public Health Work

In McDowell County, W. Va., a county dental clinic has been established. Once a year the teeth of every child in the county are examined and, if necessary, treated. A school which scores 100 per cent healthy mouths gets a half holiday. In Arlington County, Va., the activities of the school dentist, according to the

superintendent of schools, have had a definite effect in improving school work.

Dentists, as well as physicians, are finding an increasing number of opportunities in the field of public health. Recognizing the preventive character of most dental work, many employers now maintain a clinic for the regular inspection and care of their workers. In many schools dental examinations are being made regularly, and, where the parents are unable to pay for the needed treatment, the requisite work is sometimes done in a school clinic. Instruction in the care of the teeth is also provided. In a number of States bureaus of dentistry or mouth hygiene have been established in connection with the State department of health or the State department of education.

THE DENTAL CLINIC WITHIN THE SCHOOL

The number of such clinics, in industries and stores as well as in schools, is increasing

The training for a dental surgeon in the positions described does not differ greatly from that required for private practice. He must, however, be thoroughly familiar with all branches of oral hygiene, and, for the important administrative positions, be able to establish and supervise dental clinics as well as educational work in mouth hygiene. A complete course at a reputable dental college is necessary, even for the minor positions. This course has recently been lengthened in most colleges

to five years. Only high-school graduates are permitted to undertake such a course.

Less severe are the requirements for the oral hygienist, a new occupation which has developed particularly in connection with dental work in schools and industries. The oral hygienist is concerned chiefly with the care, the scaling, and polishing of the teeth. This is likely to reveal various acute and chronic diseases of the soft tissues of the mouth which in some cases the oral hygienist can treat. In order to do this, however, he (or she) must have acquired a high degree of skill and training. Schools for dental hygienists give a course extending over a period of two years. Most of these schools are in connection with established dental colleges, though several of an independent character exist.

As in the case of dispensary physicians, little exact information can be given with regard to the salaries paid. The oral hygienist may secure from $1,500 to $2,500; the dental surgeon, of course, considerably more, rising to at least $5,000.

The available information indicates that the demand for dental workers of the types described exceeds the supply. Oral hygienists who are properly trained and who have had experience in lecturing are in great demand.

4. The Sanitary Engineer

A great American city, Chicago, suffered from a high typhoid-fever rate. As is often the case, the water supply was found to be responsible. Chicago secured its water from Lake Michigan, into which the Chicago River, carrying most of the sewage of the city, then emptied. By reversing the course of the Chicago River, making it

INTENTIONAL SECOND EXPOSURE

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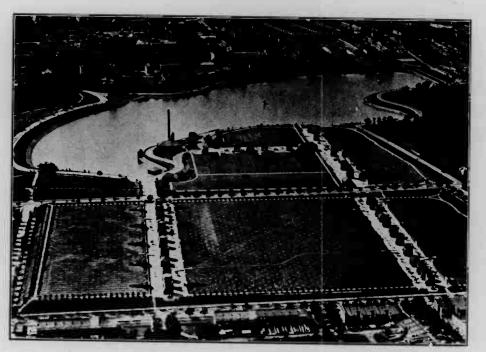
discharge its waters into the Mississippi, the pollution was ended and the typhoid rate greatly reduced.

The transformation of the Chicago River into the Chicago Drainage Canal was undertaken by direction of a sanitary engineer, a type of sanitarian whose contribution to public health progress has been invaluable. He is concerned with questions of water supply and purification, of sewerage and sewage disposal. He is essential in



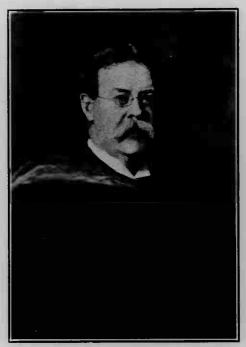
Trained men are required in order that this filtration plant may perform its work in such a manner as to protect the public health

certain types of malaria control work. The general sanitation of large industrial establishments and of large buildings may require his aid.

Most sanitary engineers are in municipal service. State and Federal health agencies also require a number of such men, and firms of consulting engineers in private practice have places for a limited number. In the sale of certain products used in sanitary engineering under-

takings, such as water purification apparatus, trained sanitary engineers are often needed.

The training required is provided in the departments of engineering at various universities and in other technical institutions. About 12 such schools offer degrees in sanitary engineering. The curriculum consists of regular work in civil engineering, supplemented by courses in chemistry and biology. Practical work is, of course, essential. An excellent preparation consists of a regular four-year course in civil engineering with an extra year of special work in sanitary biology and chemistry and special phases of sanitary engineering, leading to an M. S. degree.



WILLIAM T. SEDGWICK

A prominent sanitary engineer, a teacher at the Massachusetts Institute of Technology, author of scientific works on public health, Sedgwick had become, at the time of his death in 1921, one of America's most useful citizens

On graduation a sanitary engineer should get not less than $2,500. After some years of experience, the return ranges frequently from $3,000 to $5,000; larger amounts are received by those in consulting work and in special positions.

As in other fields of public health, the present supply of personnel is hardly adequate to the demand. There is to-day a scarcity of young sanitary engineers.

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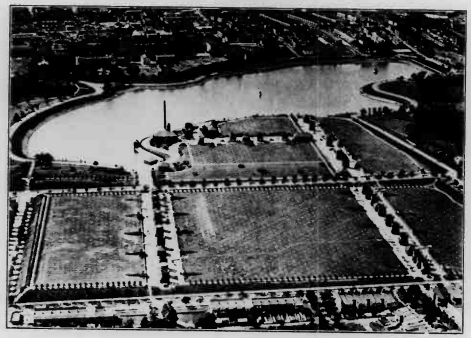

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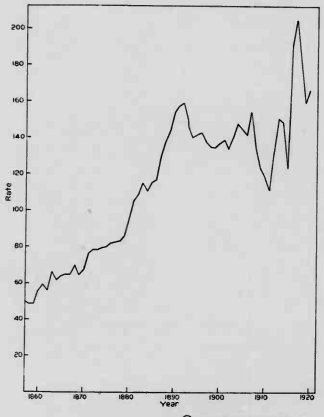
5. The Statistician

The rôle of the statistican in connection with health activities is now receiving increasing recognition. He is responsible for the registration of births, deaths, and



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Mortality from organic diseases of the heart per 100,000 persons in Massachusetts 1857–1920

THE REDUCTION OF HEART DISEASE THROUGH PREVENTIVE MEASURES AWAITS THE ORGANIZED ATTACK OF HEALTH AUTHORITIES

marriages, for the tabulation and analysis of morbidity reports, and he may assume charge of epidemiological and statistical researches. Investigations to determine the value of various health activities and the efficacy of special methods and procedures also may be undertaken.

Men and women who have received special training in statistical methods and analysis are needed for this work.

Statistical health work is now being conducted not only by official health agencies—national, State, and local health departments—but also by the large insurance companies, by many private health organizations, by industrial and commercial concerns, and by research organizations.

The training required varies, of course, with the particular type of work to be done. Mathematical knowledge is a great asset as a basis for special statistical training. The statistical training should cover at least two years of graduate work; a doctorate is desirable. Familiarity with public health work sufficient for a C. P. H.[4] is usually required for the positions described. A medical training is of great advantage.

A well-trained beginner in the statistical field should earn $1,500 to $2,000 or more a year as an initial salary. This figure rises fairly rapidly with experience and the more important places pay considerably higher salaries.

There is a good demand for trained personnel. No difficulty is experienced in placing able persons.

6. The Public Health Nurse

When medical inspection was introduced into the schools of New York City, large numbers of children were found to be in need of dental and medical attention. Careful recommendations were made. In only 6 per cent of the cases, however, were these recommendations followed. Later it was observed that in 84 per cent of the cases the needed treatment was secured. This change

[4] See p. 15.

was due largely to the activities of school nurses. They have made school medical inspection truly effective.

This is but one of the ways in which an increasingly important part in public health work is being taken by the nurse. She has become an indispensable factor in public health service. Her activities in the discovery and correction of physical imperfections, in teaching the practice of healthful living and in the establishment of hygienic

In some rural communities, where physicians are scarce, the public-health nurse is quite indispensable

habits, in caring for the sick, in checking and eliminating communicable and preventable diseases, are becoming more and more a form of public health work. She is being employed for prenatal and maternity as well as bedside nursing, for infant and child welfare work, for school and industrial nursing. She is the teacher who carries the gospel of health into the individual home. In tuberculosis work and the control of other communicable diseases she can be very useful. Upon her, in rural

districts particularly, may devolve the organization of an elementary public health campaign. Where other direction has not yet been provided she will more and more assume a position of leadership, but if possible she should always work under medical supervision.

Nurses for these different kinds of work are employed by both official and nonofficial agencies. Private organizations, such as visiting nurse associations, infant and child welfare organizations, industrial plants, and tuberculosis societies, provide numerous highly interesting and responsible positions. A rapid expansion is taking place in the number of nurses employed by official agencies. State and local health departments as well as school systems are recognizing the value of this type of sanitation. They offer a large range of positions from that of a nurse in the tuberculosis or venereal diseases clinic to the director of a State bureau of public health nursing.

An attractive personality is an important qualification for successful work. The minimum training for a public health nurse is an eight months' course at one of the universities or schools of social work giving an accredited course in public health nursing, in addition to a basic hospital training leading to the R. N. (registered nurse). It is sometimes necessary to accept a shorter period of special training or well supervised experience in lieu of theoretical instruction in public health nursing, but the R. N. is essential, and a previous A. B. degree very desirable. The larger and more exacting positions are filled by nurses who have had extensive training and experience.

The salary range for public health nurses is from $125 per month for the staff visiting nurse to $2,500 per year

INTENTIONAL SECOND EXPOSURE

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and upward for executives of the larger visiting nurse associations and State and national organizations.

In the larger cities the supply of public health nurses is inadequate; in rural districts it is far behind the demand, and in the sparsely settled regions of the country almost nil. There are already 12,000 public health

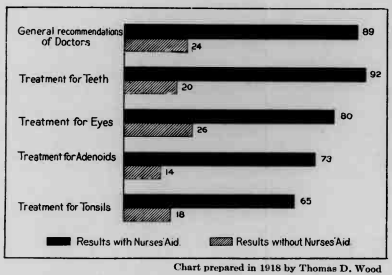


Chart prepared in 1918 by Thomas D. Wood

Percentages of physicians' recommendations carried out by parents of school children with and without the aid of nurses for follow-up work. Percentages based on 3,133 Philadelphia school children found with physical defects

There are now only 12,000 public-health nurses, although 50,000 are needed for the present population. Partially as a result of this deficiency, the physical defects of many school children remain uncorrected.

nurses at work, and, while funds will not become available as rapidly as the situation may require, it has been estimated that 50,000 are actually needed for the present population, and the number of positions is steadily increasing. This is a field in which there are very large opportunities for properly trained women of imagination,

ability, and enterprise. The need for nurses is one of the largest outstanding problems before the health administrator of the present day.

7. The Medical Social Worker

With the realization that economic and social conditions play a large part in individual and community health, a place in health work has developed for the medical social worker. She will find, particularly in connection with clinics and hospitals, numerous opportunities. The social worker investigates conditions in the home of the patient and aims to assist in treatment by the adjustment of the individual to his environment and of the environment to the individual. She may help to protect the rest of the family from infection, and carry on a constant campaign of education. All this work should have medical supervision.

Since a large proportion of the cases calling for relief and guidance which come to the attention of charity organization societies and similar agencies are caused by sickness, there is an increasing tendency for all social workers to become medical social workers. On the other hand, a considerable number of public health nurses are assuming the functions of the medical social worker. Mental hygiene clinics and mental disease hospitals are more and more making use of social workers with psychiatric training for "follow-up" and prevention.

Preparation for medical social work should include training in social case work plus a study of the principles of personal and community health and a general survey of the field of preventive medicine. A two-year course at a school of social work where practical medical social

training is given, the special work in health being under medical direction, will provide the equipment necessary.

The remuneration for social work ranges from $1,200 to $2,500 and upward. Salaries are improving as better trained workers become available. The field is constantly expanding and there will continue to be a demand for well-trained medical social workers.

8. The Nutrition Expert

In a large public institution in a southern State pellagra was prevalent. An investigator, acting upon one theory with regard to this disease, recommended that more care be exercised in the inspection of the corn meal used. No reduction in the number of cases occurred. A nutrition expert, having knowledge of recent researches in this field, secured a change of diet. As a result of more milk, fruit, fresh vegetables, and eggs, no new cases of pellagra developed.

The appointment of a nutrition worker in a large public-school system also had advantageous results. Her survey of conditions revealed an unsuspected amount of undernutrition. Through the education of pupils and teachers and practical assistance from the women of the community in the form of a milk lunch, she succeeded in remedying this situation, thereby improving not only the physical condition of the children but also their school work.

These incidents indicate the types of problems for whose solution nutrition experts are needed. They are essential in the work of health centers, visiting nurse associations, and the like, and will almost certainly in the future be employed by many official health organizations of city

and State. In addition to practical work in connection with hospitals, orphanages, and asylums, there are numerous opportunities in the educational field. Nutrition classes have been established in public, private, and parochial schools, in settlements and out-patient clinics and at health centers. University extension work usually includes courses in nutrition. In some cities, charity organizations have established the position of visiting housekeeper, one of whose chief duties is teaching the proper preparation of proper foods.

Nutrition workers must possess enterprise, originality, and persuasive personality. The basic training necessary is provided in the larger colleges which give a bachelor's degree in home economics. Specialized training leading to the master's degree and to the Ph. D. is desirable for the more advanced positions. A certain amount of experience in social work is very advantageous, and similarly, for school work, practical experience in teaching.

The salaries paid nutrition workers vary from $1,500 per year upward. The larger salaries are for supervisors or specialized teachers of high grade. As in other fields where the extent of the work is broadening rapidly, there is a tendency toward an increase in salaries.

At the present time the supply of thoroughly trained persons in this field is not equal to the demand.

9. The Expert in Popular Health Education

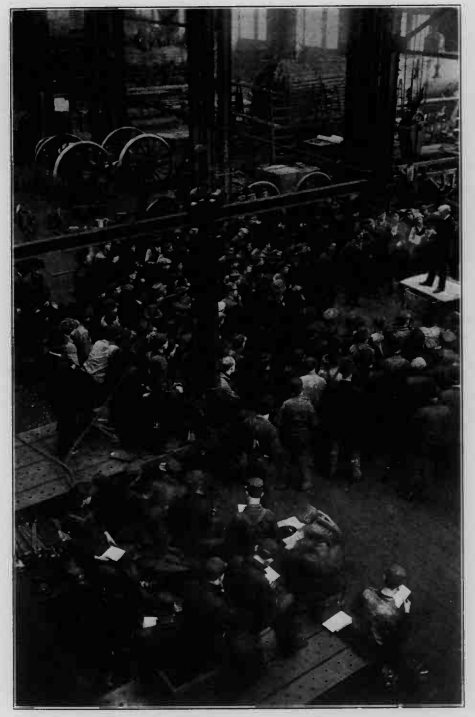
The National Tuberculosis Association was organized in 1904. At that time the death rate from tuberculosis in the registration area of the United States was 200 per 100,000. In 1922 the rate was 97 per 100,000, or less than half. This reduction represents an annual saving of

over 100,000 lives. In large measure the work of the National Tuberculosis Association is in the field of popular health education, and it is to education that a large share of the reduction in the tuberculosis death rate is probably due.

In general the public health campaign has become more and more consciously a campaign of education. The larger State and city departments have begun to employ specialists in this field. The technique of lecture service and the organization of exhibits, the display of motion pictures, the preparation of material for pamphlets and newspapers require a specially trained individual. Recently the dramatization of sanitary facts in plays and pageants has become a popular and effective method of education, and writers and playwrights engaged in it are essentially sanitarians. As yet there is so little standardization in this work that no statement concerning training and salaries can be attempted.

10. The Expert in Physical Education

The specialist in physical education may very logically and properly be considered a member of the army of public health. Activities in this field have developed rapidly during the last few decades. Colleges are paying increased attention to the physical needs of their students as a group rather than of a few selected individuals. Secondary schools have quickly followed this lead. In elementary schools much work is being done by teachers under skilled direction. Many of the great industries of the country have recognized the social and physical benefits to be gained through organized physical education, and employ a person to take charge of this work.



A State health officer giving a health talk in the shops of a railroad company

INTENTIONAL SECOND EXPOSURE

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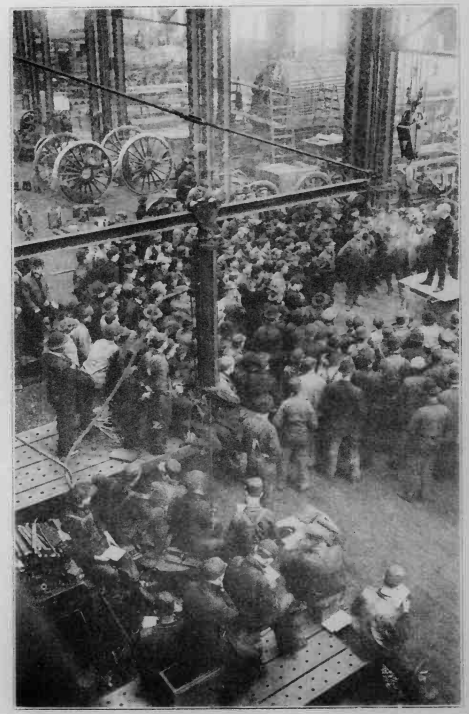


A State health officer giving a health talk in the shops of a railroad company

A course in physical education at a university or high-grade special school of physical education is requisite for effective work in this field. It is not essential but altogether desirable that the physical director receive a medical training. The director of physical education who is interested in the broad field of public health, however, should have an M. D. or Ph. D. degree, so that he may the more readily advance to an administrative position in school health work.[5] Even for the better positions in the specialized field of physical education, a medical training is of great advantage.

Salaries in physical education work range from $1,200 to $7,500. A teacher of physical education in the primary grades will get between $1,200 and $1,600. In the high school the upper figure reaches $2,400. Playground directors get from $1,200 to $2,000. A city physical director for schools will be paid from $2,500 to $4,000, and a city playground and recreation director from $2,500 to $5,000. In Y. M. C. A.'s and colleges, physical directors get from $1,500 to $5,000.

At the present time there is a great need for qualified physical education experts. Both men and women in excess of the supply are demanded. While the facilities for training new workers are increasing rapidly, it is likely that the demand will grow at an equal, if not greater, rate.

11. The Sanitary Inspector

The regular weekly report of a city health department often includes a section headed "Foodstuffs condemned." If it were not for the watchfulness of the sanitary inspec-

[5] See pages 30 and 31.

tors, food would be sold which is unfit for human consumption. This is, however, only one of the types of work carried on by the sanitary inspector. He also seeks to abate such nuisances as improperly cared for garbage, abandoned dead animals, and insanitary privies and manure bins.[6] According to one point of view most of this work can be done by police detailed for inspection duty, although milk and meat inspection requires more training than most policemen are expected to have. Part of the work done by some inspectors can be advantageously placed in the hands of a public health nurse.

In rural districts the sanitary inspector has more responsible functions. Sanitation is one of the more important activities of the average county health department and the details of this work are left on his hands. Upon his intelligence, tact, and efficiency the success of the health department largely depends. Often when funds are not available to employ a full-time or high-grade medical health officer, an inspector who is not a physician may be placed in temporary charge. The combination of an inspector with a public health nurse has been found very advantageous; in no sense do their duties conflict in rural health work.

For neither position has the sanitary inspector great need for extended education. Practical experience under direction is the best preparation. For milk inspection, however, training in an agriculture college is by no means undesirable; and systematic instruction in veterinary work is useful as preparation for meat inspection. For the inspector in rural districts some definite provision for

[6] In many cities housing and plumbing inspection is in the hands of the health department. These are specialized types of work and are not considered here.

training should be made. A summer school, a semester, or a one-year period of training covering the general field of preventive medicine and some of the practical problems which it is necessary to face would, it is believed, prove sufficient.

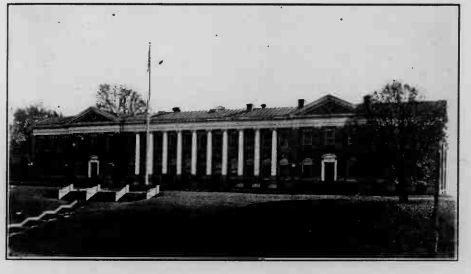
The salaries for inspection work are not large, ranging from $1,200 to $2,500, nor are the opportunities for advancement great. The tendency for the work to diminish in importance in the cities is balanced by its increasing importance in rural districts and on this account the demand for workers should not, at least for some time, be seriously reduced.

12. The Public Health Laboratory Specialist

Grouped under the head of public health laboratory specialist are found the bacteriologist, protozoologist, entomologist, and chemist. The entomologist is a minor but important specialist. He may from time to time be called in by a health department, particularly in the Tropics, for the study and control of insect carriers of disease. The bacteriologist and protozoologist are concerned primarily with the microscopic world of life. Here is found the water bacteriologist and the milk bacteriologist, the student of immunology and of the etiology of tropical diseases. The chemist, specializing in the application of his science to the problem of water supply, of sewage disposal, food control, and the testing of disinfectants, occupies an important position in public health work.

Opportunities for these scientists will be found in city and State health departments, in commercial laboratories having to do with the manufacture of drugs and disinfectants, in analytical laboratories, and investigation institutions. The Hygienic Laboratory of the United States Public Health Service employs a considerable number of persons in this field.

In the college training which should precede the graduate work essential for the higher positions, special attention should be paid to the sciences and modern languages. The problems which confront laboratory workers in this field are often so complex that they can be successfully



The Hygienic Laboratory of the United States Public Health Service. Many a battle with disease is fought in the laboratory

attacked only by those of very thorough training. A Ph. D. or M. D. degree is therefore desirable, though not necessary. Practical training, which is of primary importance, may be secured by serving an apprenticeship in minor positions.

The director of a public health laboratory, a position to which the laboratory specialist may aspire, receives from $2,500 to $7,000, bacteriologists and chemists from $1,500 to $5,000, technicians from $800 to $2,000.

INTENTIONAL SECOND EXPOSURE

training should be made. A summer school, a semester, or a one-year period of training covering the general field of preventive medicine and some of the practical problems which it is necessary to face would, it is believed, prove sufficient.

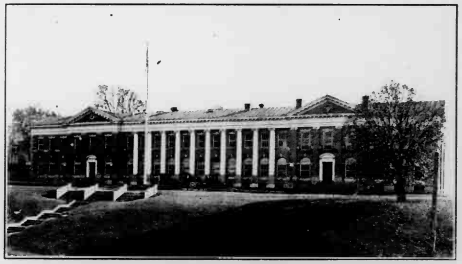
The salaries for inspection work are not large, ranging from $1,200 to $2,500, nor are the opportunities for advancement great. The tendency for the work to diminish in importance in the cities is balanced by its increasing importance in rural districts and on this account the demand for workers should not, at least for some time, be seriously reduced.

12. The Public Health Laboratory Specialist

Grouped under the head of public health laboratory specialist are found the bacteriologist, protozoologist, entomologist, and chemist. The entomologist is a minor but important specialist. He may from time to time be called in by a health department, particularly in the Tropics, for the study and control of insect carriers of disease. The bacteriologist and protozoologist are concerned primarily with the microscopic world of life. Here is found the water bacteriologist and the milk bacteriologist, the student of immunology and of the etiology of tropical diseases. The chemist, specializing in the application of his science to the problem of water supply, of sewage disposal, food control, and the testing of disinfectants, occupies an important position in public health work.

Opportunities for these scientists will be found in city and State health departments, in commercial laboratories having to do with the manufacture of drugs and disinfectants, in analytical laboratories, and investigation institutions. The Hygienic Laboratory of the United States Public Health Service employs a considerable number of persons in this field.

In the college training which should precede the graduate work essential for the higher positions, special attention should be paid to the sciences and modern languages. The problems which confront laboratory workers in this field are often so complex that they can be successfully



The Hygienic Laboratory of the United States Public Health Service. Many a battle with disease is fought in the laboratory

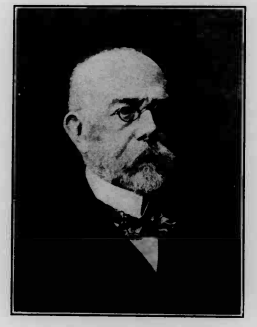
attacked only by those of very thorough training. A Ph. D. or M. D. degree is therefore desirable, though not necessary. Practical training, which is of primary importance, may be secured by serving an apprenticeship in minor positions.

The director of a public health laboratory, a position to which the laboratory specialist may aspire, receives from $2,500 to $7,000, bacteriologists and chemists from $1,500 to $5,000, technicians from $800 to $2,000.

There is an abundant supply of inadequately trained technicians but a scarcity of those who have a fundamental training in science and who are capable and efficient in technical knowledge.

13. The Specialist in Research

As in every other scientific field, research work is essential in public health. It can hardly be segregated from research in general. Three types of specialists in research in public health may be noted—(1) the epidemiologist, who studies the mass phenomena of disease; (2) the clinical investigator, who studies disease in the presence of sick persons; and (3) the laboratory investigator, who employs the methods of experimental research. Upon the work of these types of sanitarians future progress in public health largely depends.

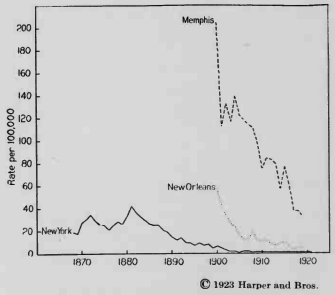


ROBERT KOCH

Through a series of discoveries, Koch definitely established bacteriology as a science

A considerable number of organizations require the services of specialists in research. Of great importance in this field is the Hygienic Laboratory of the United States Public Health Service. In addition are those private organizations devoted primarily to research in public health and others where some such research is done. A certain amount of research is carried on at State and municipal laboratories and at schools of hygiene and public health.

The training required can not be specified, although, of course, graduate work leading to a Ph. D. or D. Sc. degree is very desirable. Such graduate work may be done in addition to or independent of work leading to the M. D. degree. Far more important is the special type of person needed. He must have a passion for that sort of knowledge which can be experimentally verified; an imagination



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Mortality rates for malaria in three cities by years

The application in *some* communities of *some* scientific knowledge has already produced excellent results

which is sufficient to frame fruitful hypotheses; an inventiveness to think of ways of working out the problems which he has framed; an industry which will not be turned aside by failure; scientific honesty, which is not satisfied with half truths even if they are of immediate practical value and of personal advantage; a spirit of generous cooperation with other workers in similar lines.

INTENTIONAL SECOND EXPOSURE

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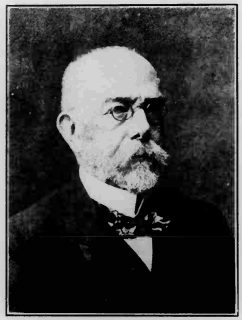

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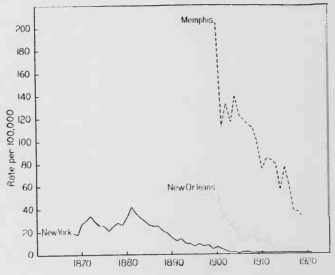

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For many years there will probably be more need for research work than money for its development. Even for available funds, however, there is at present a shortage of highly trained men.

14. The Teacher in Courses of Public Health

Probably the greatest single obstacle to the progress of the public-health movement in this country is the lack of properly trained men to direct it. To-day this condition is realized, and there are rapidly developing throughout the country not only specialized schools of public health but also public-health courses in connection with medical schools and other graduate institutions.

Places for teachers of public health are available in many of the leading universities. Such positions require, of course, a high standard of ability and a broad knowledge of the entire field. It is important that the teacher should have received some practical training.

Within recent years there has been a healthy tendency toward increased salaries in the teaching profession. A full professor now often receives up to $6,000 or more, and an assistant professor up to $4,500. With the rapid expansion of teaching facilities it is apparent that an increase in the teaching force will be required.

DIFFERENT FIELDS IN WHICH THESE OCCUPATIONS ARE OPEN

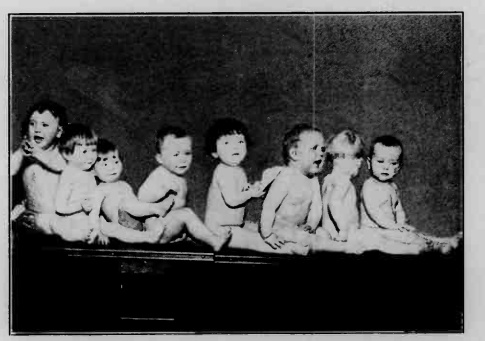
There are not only many different occupations in the realm of public health to challenge the interest and invite the participation of men and women of different types, but also many different fields of work. Tuberculosis control, for instance, offers opportunities for public-health executives,

physicians, public-health nurses, and experts in popular health education. The field of mental hygiene also offers opportunities for an increasing number of persons. It is a field of growing importance. For "what particular use is the healthy body which the sanitarian is aiming to insure," asks one of the leaders in this work, "if it does not have a reasonably healthy mind to guide and direct it?" Mental hygiene requires not only the physician who has specialized in mental disease, but also the psychologist who knows how to measure mental capacities, and the psychiatric social worker who can carry on follow-up work. A bacteriologist for laboratory work is necessary in the large sanitaria. In school health work will be found the physician, and dentist, and nurse, as well as the expert in physical education. Health service in industry requires men and women in a number of different occupations—the administrator, the clinician, the nurse, the social worker. Child hygiene will appeal particularly to women physicians. Many of the administrative positions in this field are held by women. In social hygiene are found, in addition to physicians, nurses, experts in popular health education, and social workers, lawyers, and policewomen. The control of prostitution, which is the chief source of venereal disease infection, depends to a large extent on legal activities. Now the problems of cancer and heart disease have begun to receive special attention. All these fields have features which will attract different individuals.

THE POSSIBILITIES OF ACHIEVEMENT

The possibilities of achievement open to the sanitarian of the future are almost unlimited. Whereas the private physician may relieve individual suffering, the sanitarian

is in a position to improve the health of the entire community. He deals in health on a wholesale scale. It is true that he may miss the personal contact which the physician enjoys, but, on the other hand, he becomes an influential member of the community, a citizen whose judgment is regarded with respect, a personage with the prestige accorded a public benefactor. In time of crisis such as an epidemic he is the savior of the community;



In some cities of the United States, out of every 1,000 babies born, 80 to 100 die during the first year

in ordinary times he has the satisfaction of knowing that he has contributed immeasurably to the happiness of his fellow men. No one of them but owes him for the protection which he has afforded; no one of them but has profited to some extent from his activities.

Although the opportunities in public-health work are numerous, it should be repeated that good positions are open only to the hard worker and the able student. This

profession offers such tremendous possibilities that only men of considerable ability and careful training should enter it. They will be confronted by difficult problems, far too difficult for the incapable and unendowed. For those who are competent, on the other hand, such problems will be a constant challenge. No wider field for the effective application of large talent and earnest effort is open.

"Preventable disease," questioned Edward VII, when Prince of Wales; "If preventable, why not prevented?" The prevention of preventable diseases, with a constant increase in the number of diseases to be included in this category, is the task and the opportunity of the young men and young women who choose their life career in the field of public health. Their active and intelligent efforts will remove this "canker which gnaws at the very foundations of our national strength." It is within their power to overcome this—perhaps the greatest—obstacle to the progress of the human race. Theirs will be the lasting satisfaction of having performed the highest type of patriotic service, of having contributed largely to the welfare and happiness of mankind.

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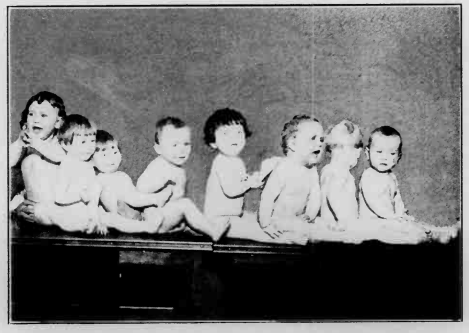

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SCHOOLS AND DEPARTMENTS OF PUBLIC HEALTH, HYGIENE AND PREVENTIVE MEDICINE

Harvard University, School of Public Health, Boston, Mass.

Howard University, School of Public Health and Hygiene, Washington, D. C. (colored).

Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Md.

Massachusetts Institute of Technology, Department of Biology and Public Health, Boston, Mass.

New York University, Public Health Courses, New York City.

Ohio State University, Department of Public Health and Sanitation, Columbus, Ohio.

University of California, Department of Hygiene, Berkeley, Calif.

University of Chicago, Department of Hygiene and Bacteriology (Rush Medical College), Chicago, Ill.

University of Michigan, Department of Hygiene and Public Health, Ann Arbor, Mich.

University of Minnesota, Department of Preventive Medicine and Public Health, Minneapolis, Minn.

University of Pennsylvania, School of Hygiene and Public Health, Philadelphia, Pa.

Western Reserve University, Department of Hygiene and Bacteriology, Cleveland, Ohio.

Yale University, Department of Bacteriology, Pathology, and Public Health, New Haven, Conn.

Further information regarding opportunities for a life career in the field of public health may be obtained by addressing

THE UNITED STATES PUBLIC HEALTH SERVICE,
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